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10/707,006	11/13/2003	Abdelaziz Ikhlef	GEMS 0215 PA	1005
27256	7590	10/14/2005	EXAMINER	
ARTZ & ARTZ, P.C. 28333 TELEGRAPH RD. SUITE 250 SOUTHFIELD, MI 48034			HO, ALLEN C	
			ART UNIT	PAPER NUMBER
			2882	

DATE MAILED: 10/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/707,006

Applicant(s)

IKHLEF, ABDELAZIZ

Examiner

Allen C. Ho

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 34, 54, 82.
2. Figs. 2, 4, 6, and 7 are objected to because these figures show vertical lines in the collimator segments. It is unclear what is represented by these vertical lines. As shown in Fig. 3, the first segment longitudinal walls and the second segment longitudinal walls do not have vertical lines. If Figs. 2, 4, 6, and 7 represent a top view of Fig. 3, then the solid vertical lines should be deleted or replaced by dashed lines as shown in Fig. 5. If the vertical lines represent latitudinal segments and the collimator chambers, the latitudinal segments should be distinguished from the collimator chambers.
3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the recitation "each of the continuous sidewall segments equals the first collimator width" in claim 20 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must

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be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following informalities:
 - (1) Paragraph [0010], line 2, the figure caption of Fig. 3 should begin a new paragraph;
 - (2) Paragraph [0017], line "10" should be replaced by --30--;
 - (3) Paragraph [0019], lines 16 and 18, "width" should be replaced by --depth--;
 - (4) Paragraph [0019], line 26, "4" should be replaced by --5--; and
 - (5) Paragraph [0020], line 28, "52" should be replaced by --78--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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6. Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 20 recites "each of the continuous sidewall segments equals said first collimator width". It is unclear what this recitation means.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

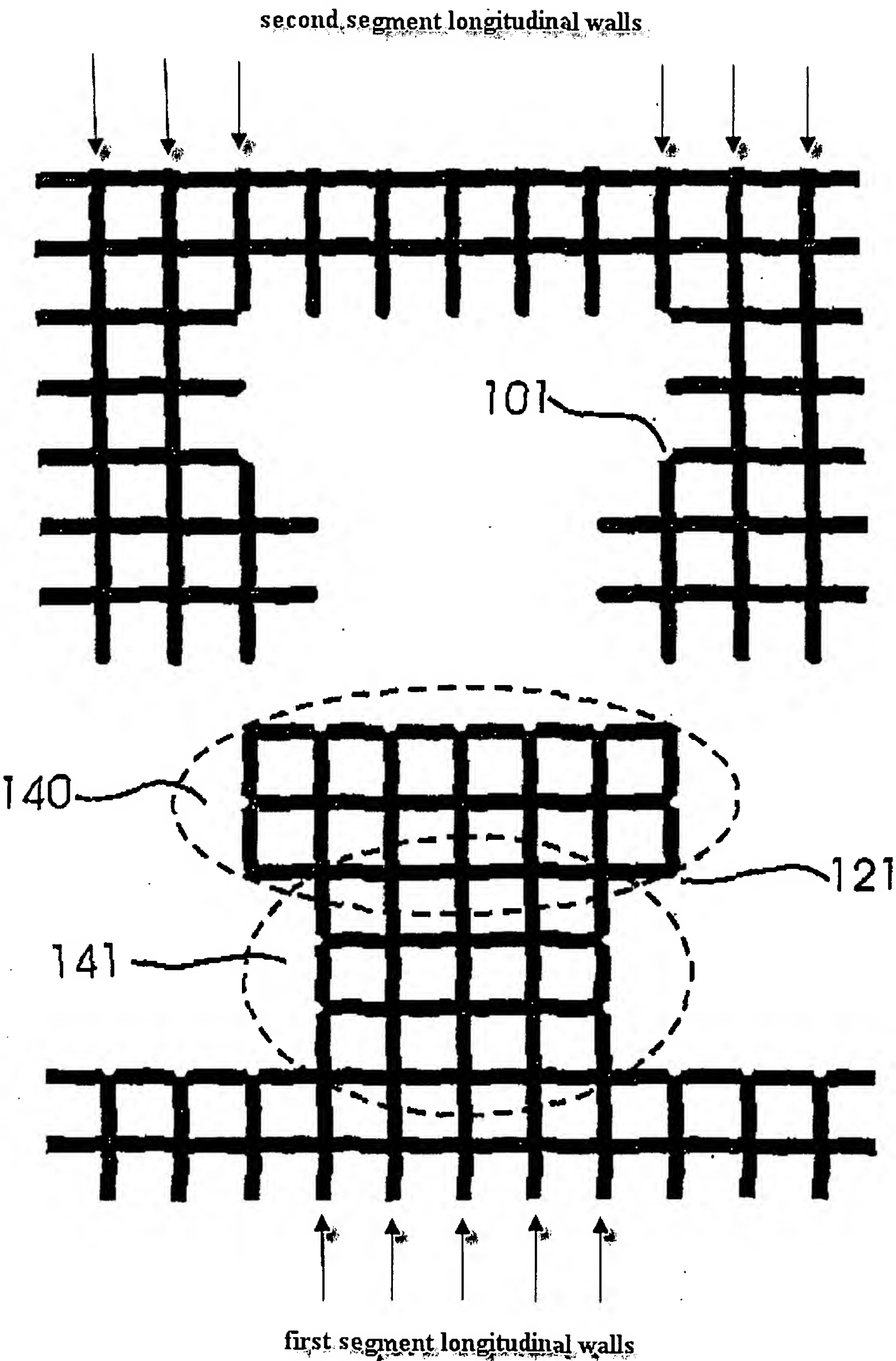
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1, 2, 6, 9, 12-14, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Tang (U. S. Patent No. 5,949,850).

With regard to claim 1, Tang disclosed a detector assembly comprising: a collimator assembly (30) comprising:

a first collimator segment (120) having a first left end and a first right end, the first collimator segment comprising: a plurality of first segment longitudinal walls having a first segment depth, each of the plurality of first segment longitudinal walls including a first locking protrusion (140, 141) comprising only a portion (the entire portion) of the first segment depth; and



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a second collimator segment (100) having a second left end and a second right end, the second collimator segment comprising: a plurality of second segment longitudinal walls having a second segment depth, each of the plurality of second segment longitudinal walls including a second interlocking protrusion (103) comprising only a portion (the entire portion) of the second segment depth, each of the second interlocking protrusion engaging one of the first interlocking protrusions to form a continuous side wall segment.

With regard to claim 2, Tang disclosed a detector assembly as described in claim 1, wherein the first interlocking protrusion comprises a block shaped protrusion (140, 141).

With regard to claim 6, Tang disclosed a detector assembly as described in claim 1, further comprising: a plurality of first latitudinal segments positioned between each of the plurality of first longitudinal walls such that a plurality of first collimator chambers is formed, each of the first collimator chambers having a first collimator width (Fig. 2).

With regard to claim 9, Tang disclosed a detector assembly as described in claim 1, further comprising: a scintillator assembly in communication with the collimator assembly, the scintillator assembly having a scintillator longitudinal width, the scintillator longitudinal width smaller than a collimator assembly longitudinal width (column 11, lines 16 - 39).

With regard to claim 12, Tang disclosed a detector assembly as described in claim 6, wherein the plurality of first collimator chambers forms a rectangular array.

With regard to claim 13, Tang disclosed a collimator assembly segment comprising: a first collimator segment (120) having a first left end and a first right end, the first collimator segment comprising: a plurality of first segment longitudinal walls having a first segment depth,

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each of the plurality of first segment longitudinal walls including a first locking protrusion (140, 141) comprising only a portion (the entire portion) of the first segment depth.

With regard to claim 14, Tang disclosed a collimator assembly segment as described in claim 13, further comprising: a plurality of first latitudinal segments positioned between each of the plurality of first longitudinal walls such that a plurality of first collimator chambers is formed, each of the first collimator chambers having a first collimator width (Fig. 2).

With regard to claim 19, Tang disclosed a method of manufacturing a detector assembly with extended longitudinal depth comprising the steps of: casting a first collimator segment (120) comprising a plurality of first segment longitudinal walls having a first segment depth, each of the plurality of first segment longitudinal walls including a first interlocking protrusion (140, 141) comprising only a portion (the entire portion) of the first segment depth; casting a second collimator segment (100) comprising a plurality of second segment longitudinal walls having a second segment depth, each of the plurality of second segment longitudinal walls including a second interlocking protrusion (103) comprising only a portion (the entire portion) of the second segment depth; and engaging each of the second interlocking protrusions with one of the first interlocking protrusions to form a plurality of continuous sidewall segments.

9. Claims 1-3 and 6-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Igarashi *et al.* (U. S. Patent No. 6,587,538 B2).

With regard to claim 1, Igarashi *et al.* disclosed a detector assembly comprising: a collimator assembly (Figs. 10A, 10B, 10C) comprising:

a first collimator segment (220) having a first left end and a first right end, the first collimator segment comprising: a plurality of first segment longitudinal walls (221, 222) having

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a first segment depth, each of the plurality of first segment longitudinal walls including a first locking protrusion (tapered shape) comprising only a portion (the entire portion) of the first segment depth; and

a second collimator segment (230) having a second left end and a second right end, the second collimator segment comprising: a plurality of second segment longitudinal walls (231, 232) having a second segment depth, each of the plurality of second segment longitudinal walls including a second interlocking protrusion (tapered shape) comprising only a portion (the entire portion) of the second segment depth, each of the second interlocking protrusion engaging one of the first interlocking protrusions to form a continuous side wall segment.

With regard to claim 2, Igarashi *et al.* disclosed a detector assembly as described in claim 1, wherein the first interlocking protrusion comprises a block (a solid piece of material).

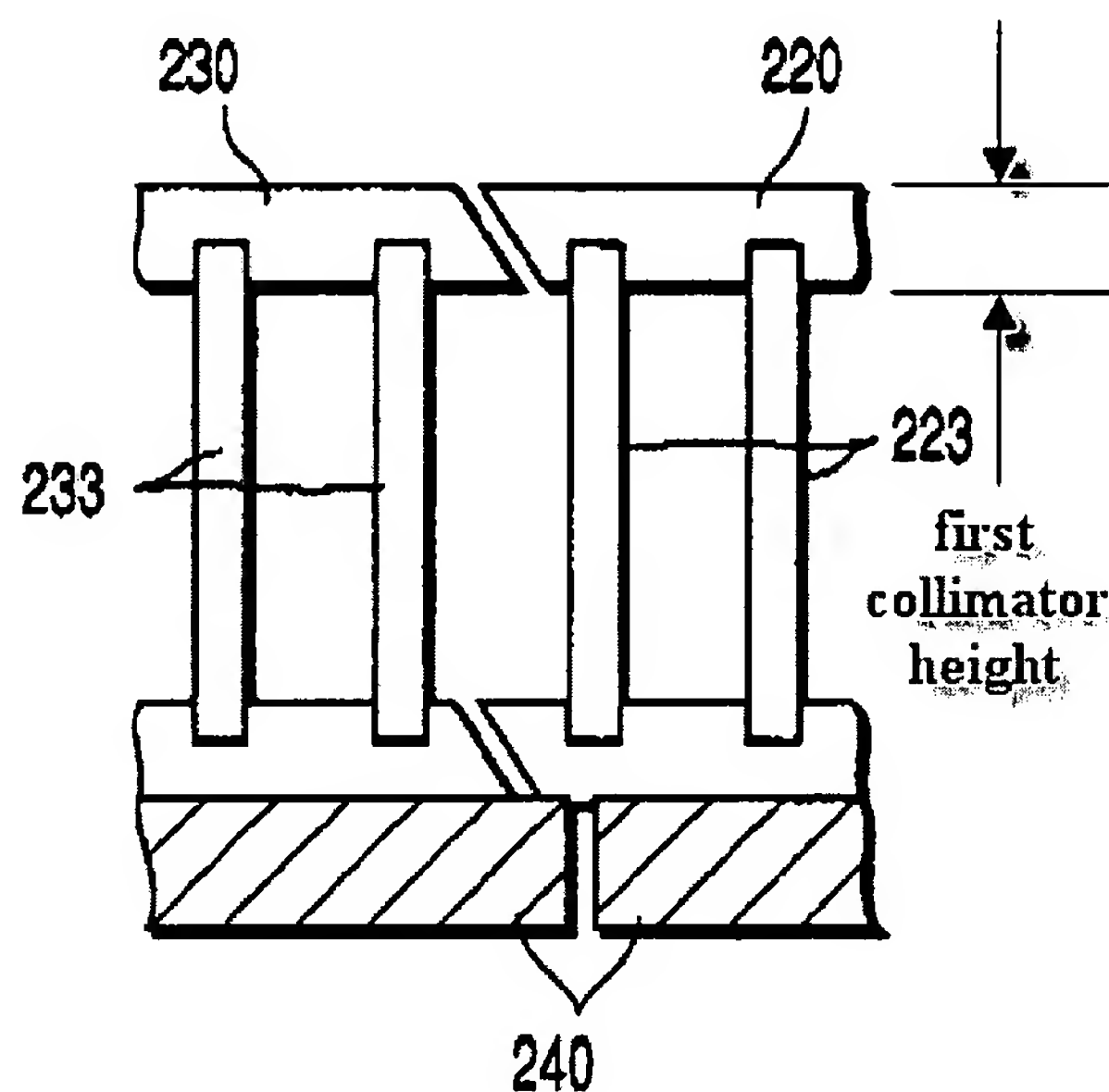
With regard to claim 3, Igarashi *et al.* disclosed a detector assembly as described in claim 1, wherein the first interlocking protrusion comprises a triangular shaped protrusion (tapered shape).

With regard to claim 6, Igarashi *et al.* disclosed a detector assembly as described in claim 1, further comprising: a plurality of first latitudinal segments (223) positioned between each of the plurality of first longitudinal walls such that a plurality of first collimator chambers is formed, each of the first collimator chambers having a first collimator width.

With regard to claim 7, Igarashi *et al.* disclosed a detector assembly as described in claim 6, wherein each of the first interlocking protrusions comprises a first protrusion width, the first protrusion width less than the first collimator width (Fig. 10C).

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With regard to claim 8, Igarashi *et al.* disclosed a detector assembly as described in claim 1, wherein: the first collimator segment comprises a first collimator height; the first interlocking protrusion comprising a first protrusion height; the second interlocking protrusion comprising a second protrusion height; and the first protrusion height added to the second protrusion height equaling the first collimator height (Fig. 10C).



With regard to claim 9, Igarashi *et al.* disclosed a detector assembly as described in claim 1, further comprising: a scintillator assembly (40) in communication with the collimator assembly, the scintillator assembly having a scintillator longitudinal width, the scintillator longitudinal width smaller than a collimator assembly longitudinal width (Fig. 1).

With regard to claim 10, Igarashi *et al.* disclosed a detector assembly as described in claim 1, wherein the first collimator segment further comprises: a plurality of opposing interlocking protrusions (tapers) each of which is formed on one of the plurality of the plurality of first segment longitudinal walls (221, 222), each of the plurality of opposing interlocking

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protrusions positioned opposite one of the first locking protrusions, the opposing interlocking protrusion comprising only a portion of the first segment depth (column 8, lines 19 - 34).

With regard to claim 11, Igarashi *et al.* disclosed a detector assembly as described in claim 10, wherein each of the opposing interlocking protrusions creates a mirror negative to one of the first interlocking protrusions.

With regard to claim 12, Igarashi *et al.* disclosed a detector assembly as described in claim 6, wherein the plurality of first collimator chambers forms a rectangular array.

With regard to claim 13, Igarashi *et al.* disclosed a collimator assembly segment comprising: a first collimator segment (220) having a first left end and a first right end, the first collimator segment comprising: a plurality of first segment longitudinal walls (221, 222) having a first segment depth, each of the plurality of first segment longitudinal walls including a first locking protrusion (tapered shape) comprising only a portion (the entire portion) of the first segment depth.

With regard to claim 14, Igarashi *et al.* disclosed a collimator assembly segment as described in claim 13, further comprising: a plurality of first latitudinal segments (223) positioned between each of the plurality of first longitudinal walls such that a plurality of first collimator chambers is formed, each of the first collimator chambers having a first collimator width (Fig. 10C).

With regard to claim 15, Igarashi *et al.* disclosed a detector assembly as described in claim 14, wherein each of the first interlocking protrusions comprises a first protrusion width, the first protrusion width less than the first collimator width (Fig. 10C).

With regard to claim 16, Igarashi *et al.* disclosed a detector assembly as described in claim 1, wherein: the first collimator segment comprises a first collimator height; the first interlocking protrusion comprising a first protrusion height; the second interlocking protrusion comprising a second protrusion height; and the first protrusion height added to the second protrusion height equaling the first collimator height (Fig. 10C).

With regard to claim 17, Igarashi *et al.* disclosed a detector assembly as described in claim 13, wherein the first collimator segment further comprises: a plurality of opposing interlocking protrusions (tapers) each of which is formed on one of the plurality of the plurality of first segment longitudinal walls (221, 222), each of the plurality of opposing interlocking protrusions positioned opposite one of the first locking protrusions, the opposing interlocking protrusion comprising only a portion of the first segment depth (column 8, lines 19 - 34).

With regard to claim 18, Igarashi *et al.* disclosed a detector assembly as described in claim 17, wherein each of the opposing interlocking protrusions creates a mirror negative to one of the first interlocking protrusions.

With regard to claim 19, Igarashi *et al.* disclosed a method of manufacturing a detector assembly with extended longitudinal depth comprising the steps of: casting a first collimator segment (220) comprising a plurality of first segment longitudinal walls (221, 222) having a first segment depth, each of the plurality of first segment longitudinal walls including a first interlocking protrusion (tapers) comprising only a portion (the entire portion) of the first segment depth; casting a second collimator segment (230) comprising a plurality of second segment longitudinal walls (231, 232) having a second segment depth, each of the plurality of second segment longitudinal walls including a second interlocking protrusion (tapers) comprising only a

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portion (the entire portion) of the second segment depth; and engaging each of the second interlocking protrusions with one of the first interlocking protrusions to form a plurality of continuous sidewall segments.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tang (U. S. Patent No. 5,949,850) as applied to claim 1 above.

With regard to claim 3, Tang disclosed a detector assembly as described in claim 1. However, Tang failed to teach that the first interlocking protrusion comprises a triangular shaped protrusion.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide triangular-shaped first interlocking protrusions, since a person would be motivated to provide the first interlocking protrusions with a shape that would interlock with a corresponding shape on the second interlocking protrusions.

12. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang (U. S. Patent No. 5,949,850) as applied to claim 1 above, and further in view of Guida *et al.* (U. S. Patent No. 5,557,650).

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With regard to claims 4 and 5, Tang disclosed a detector assembly as described in claim 1. However, although Tang disclosed that the plurality of first segment longitudinal walls comprise a high-z material (column 8, lines 52-56), Tang failed to teach that the plurality of first segment walls comprise tungsten or lead.

Guida *et al.* disclosed a collimator assembly that comprises of a plurality of walls (12), the walls comprise high x-ray absorbing materials such as tungsten and lead (column 5, lines 30 - 43).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a plurality of first segment walls comprising tungsten or lead, since a person would be motivated to use an x-ray absorbing material.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

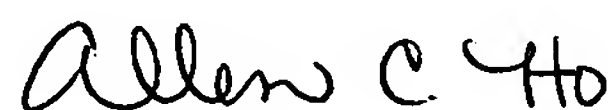
- (1) Döring (U. S. Patent No. 4,778,997) disclosed a collimator assembly comprising a first collimator segment, a second collimator segment, and interlocking protrusions.
- (2) Leask (U. S. Patent No. 3,988,589) disclosed a collimator assembly comprising a first collimator segment, a second collimator segment, and interlocking protrusions.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (571) 272-2491. The examiner can normally be reached on Monday - Friday from 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached at (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Allen C. Ho
Primary Examiner
Art Unit 2882

13 October 2005